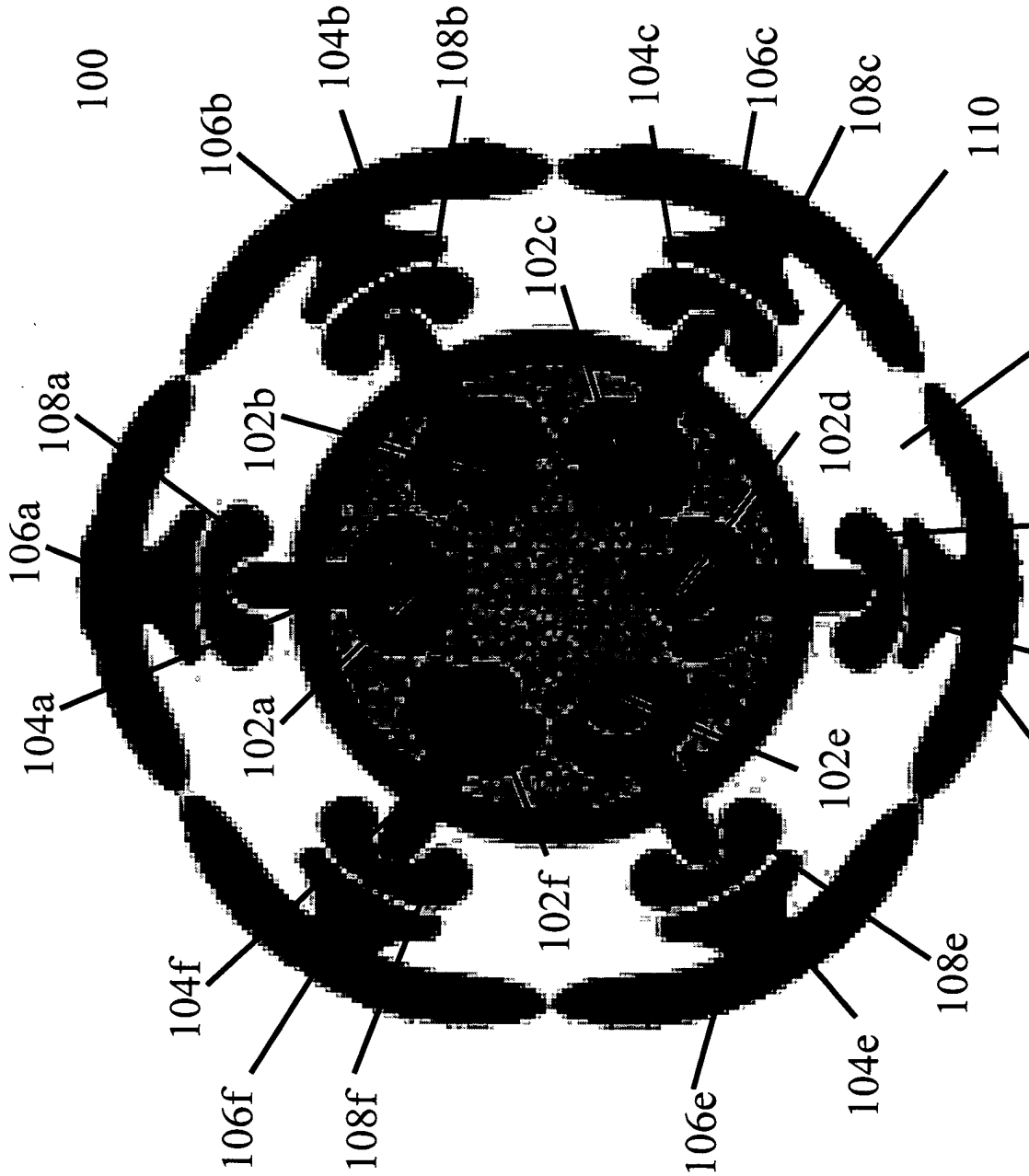
100
102a
102b
102c
102d
102e
102f
104a
104b
104c
104d
104e
104f
106a
106b
106c
106d
106e
106f
108a
108b
108c
108d
108e
108f
110
112

Figure 1

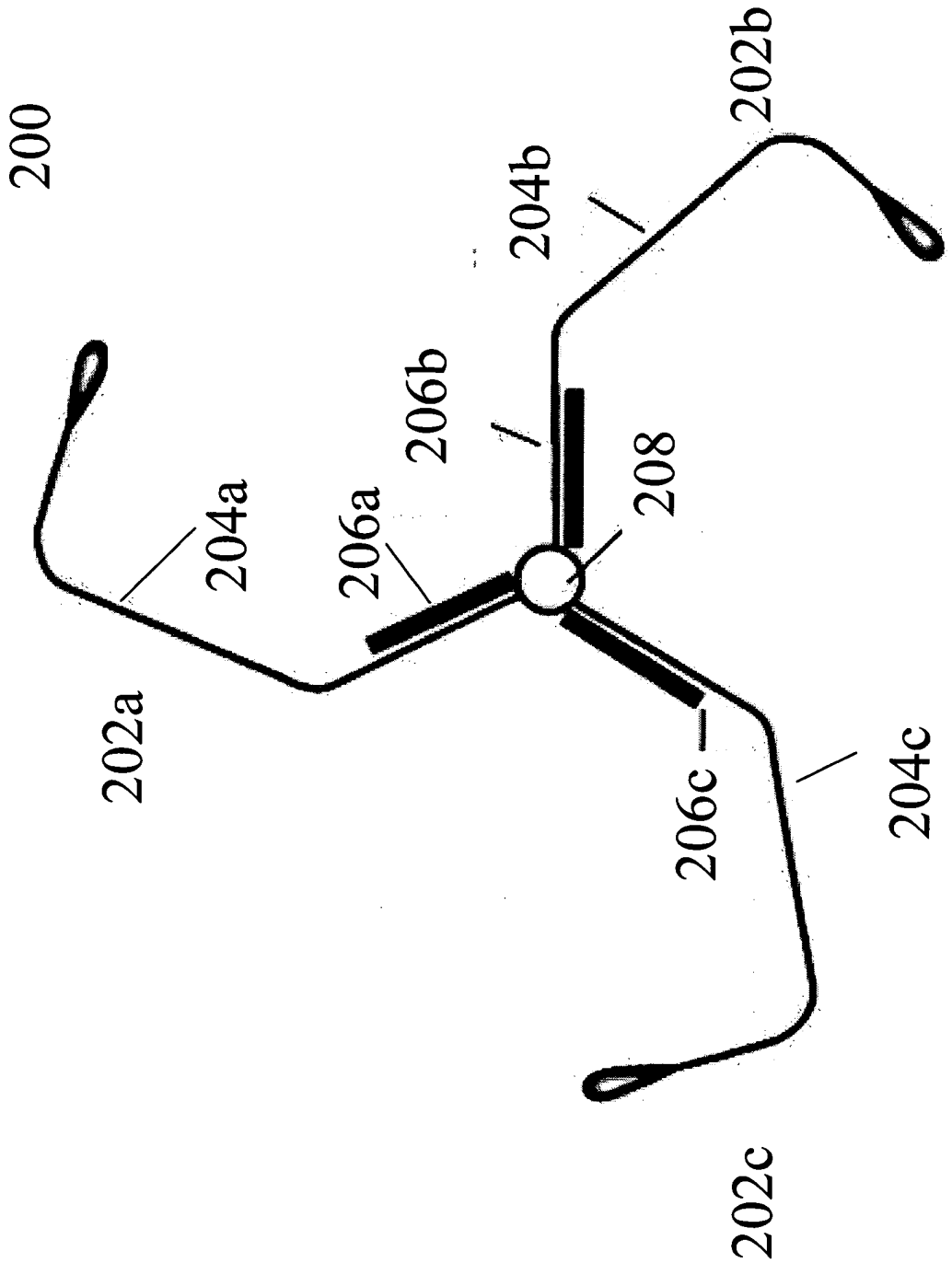

Figure 2

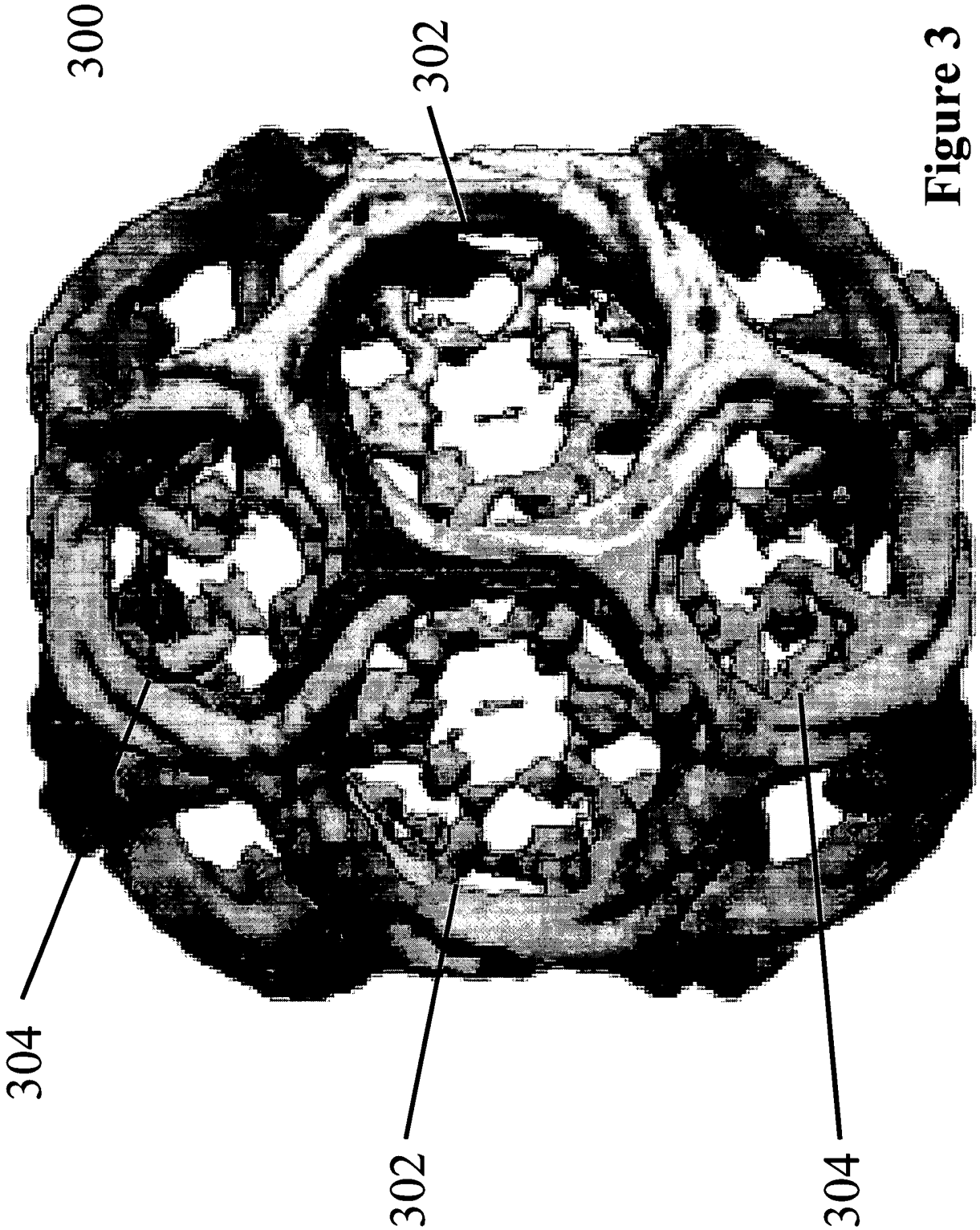

Figure 3

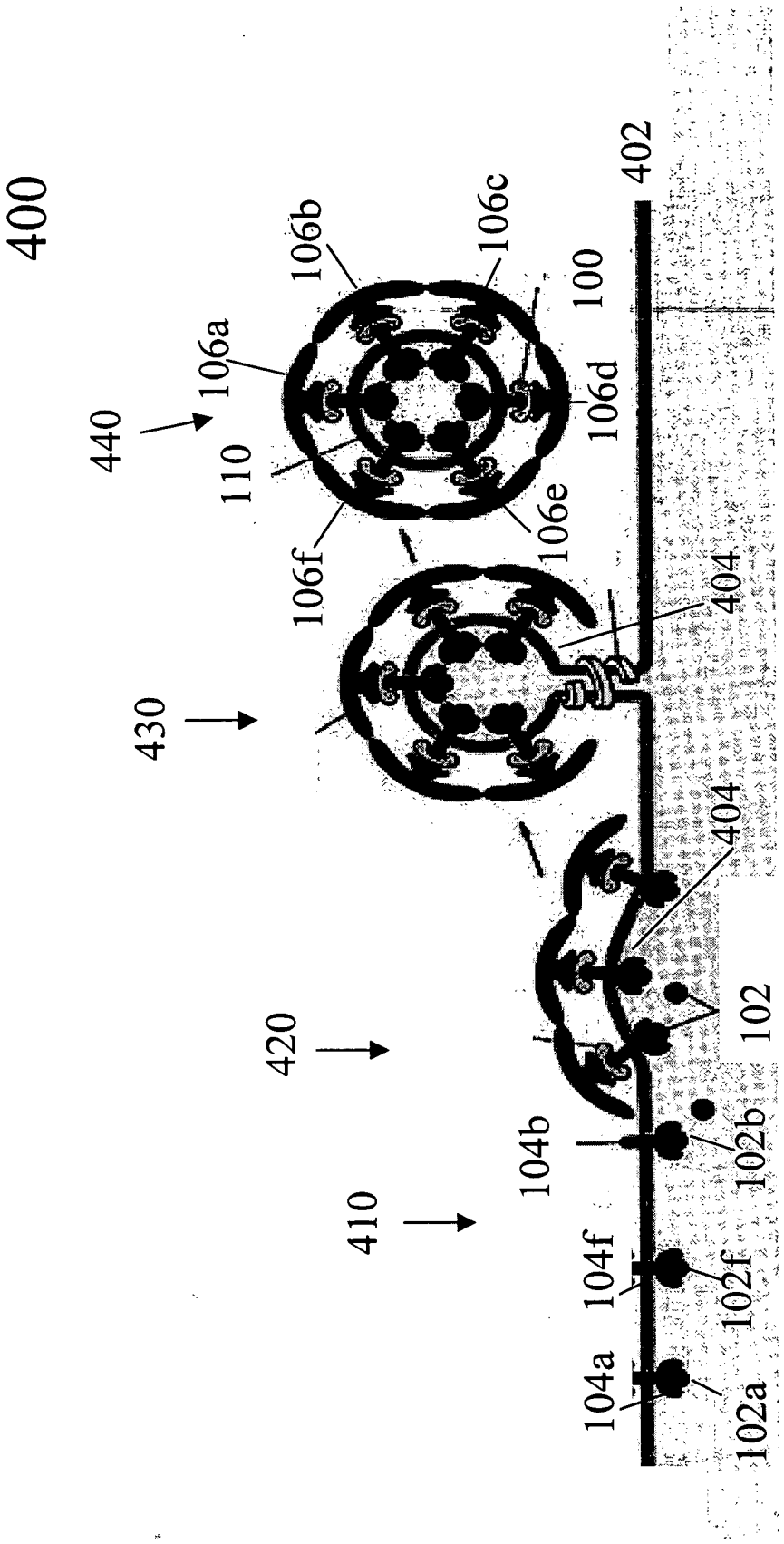
400
440
106a
106b
106c
110
100
402
106d
106e
106f
404
430
404
420
102
104b
102b
410
104f
102f
104a
102a

Figure 4

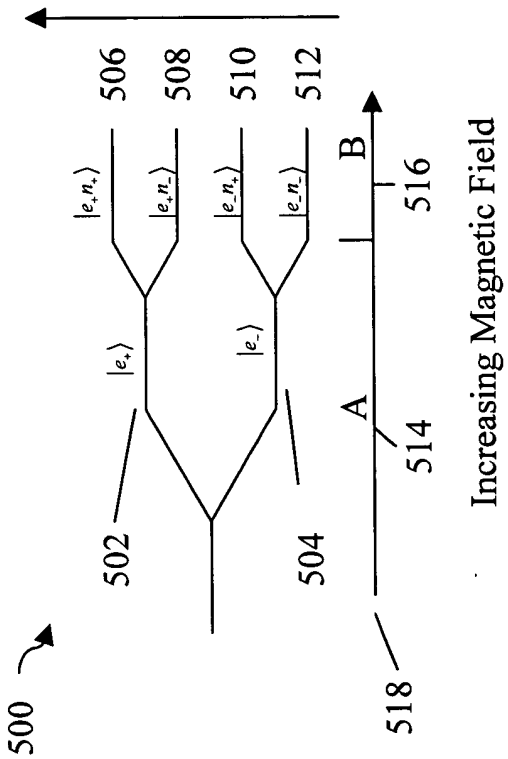
Increasing E
506
508
510
512
$|e_+,n_+\rangle$
$|e_+,n_-\rangle$
$|e_-,n_+\rangle$
$|e_-,n_-\rangle$
$|e_+\rangle$
$|e_-\rangle$
B
A
502
504
514
516
518
500
Increasing Magnetic Field

Figure 5

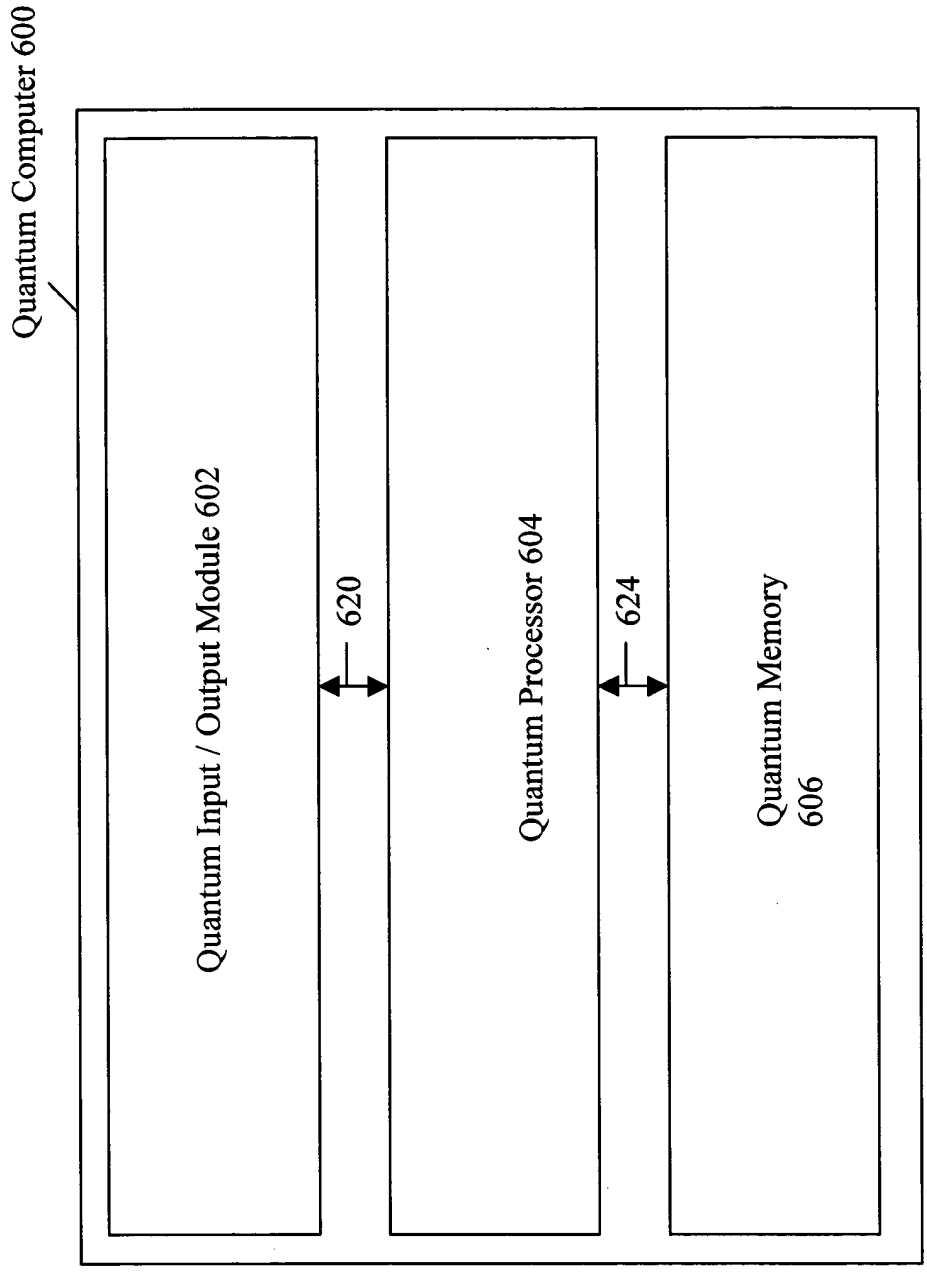
Quantum Computer 600
Quantum Input / Output Module 602
620
Quantum Processor 604
624
Quantum Memory
606

Figure 6

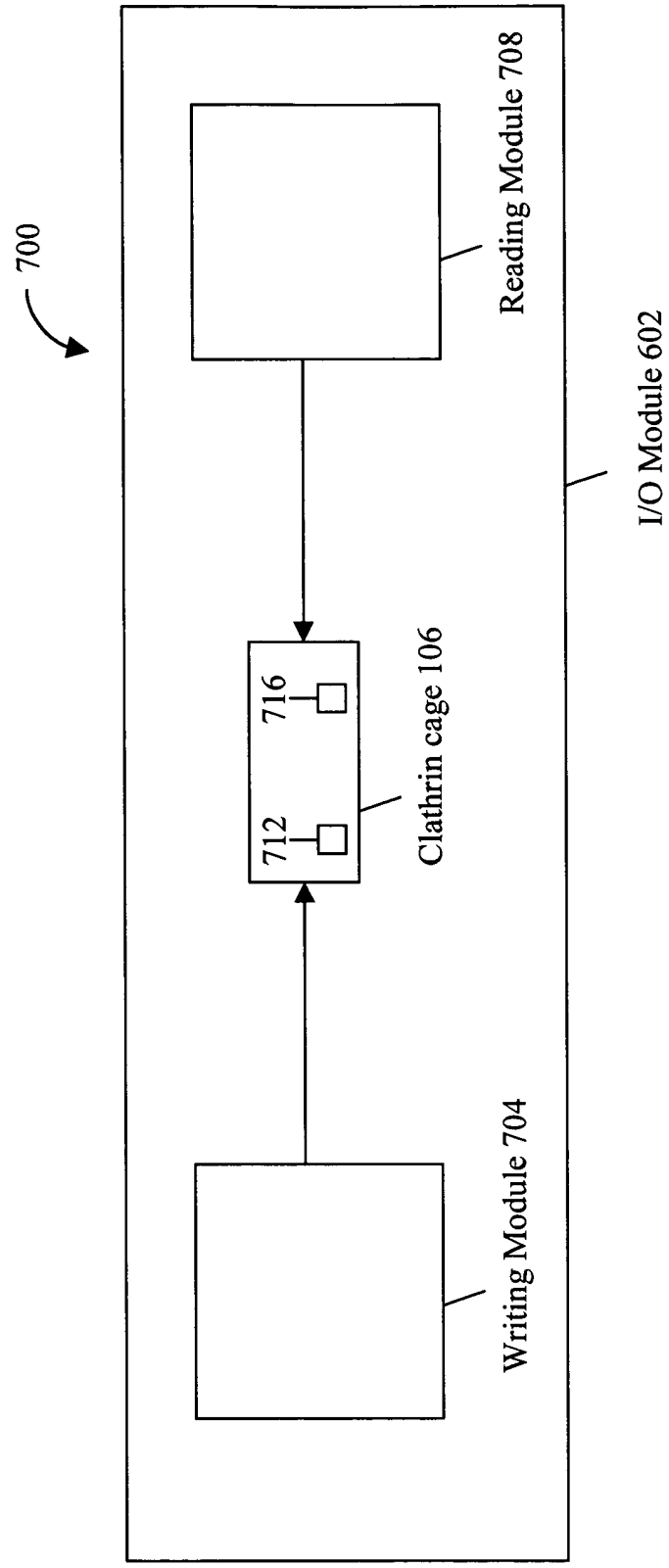
700
Reading Module 708
I/O Module 602
716
712
Clathrin cage 106
Writing Module 704

Figure 7

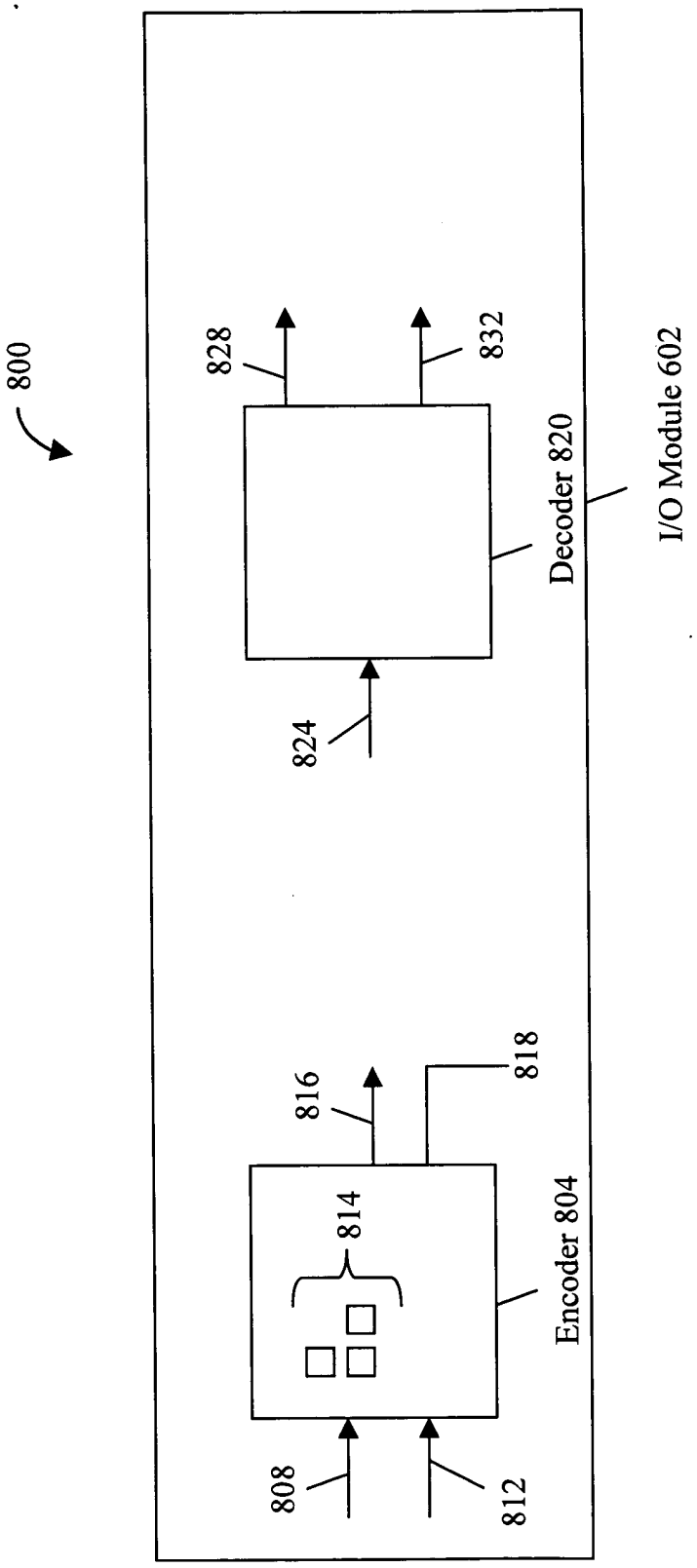
800
828
832
I/O Module 602
Decoder 820
824
816
818
814
Encoder 804
808
812

Figure 8

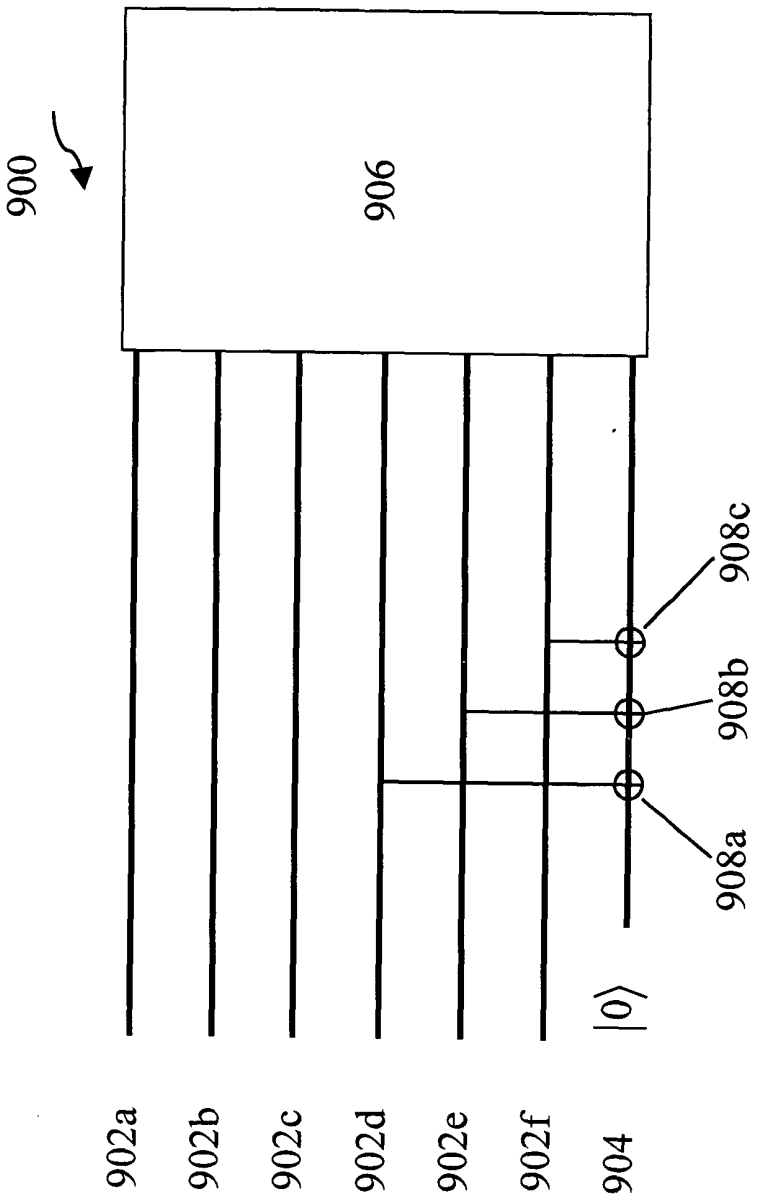
900
906
908c
908b
908a
$|0\rangle$
902a
902b
902c
902d
902e
902f
904

Figure 9

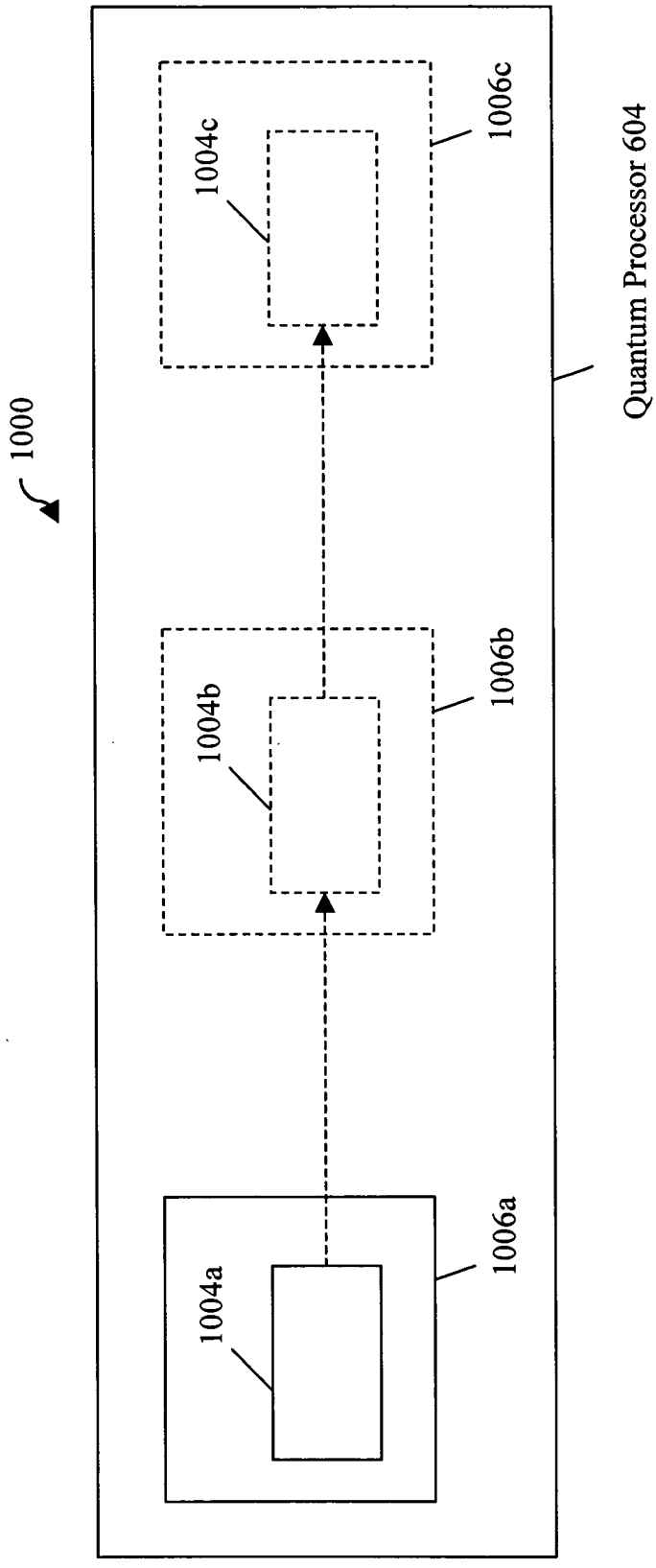
1000
Quantum Processor 604
1006c
1004c
1006b
1004b
1006a
1004a

Figure 10

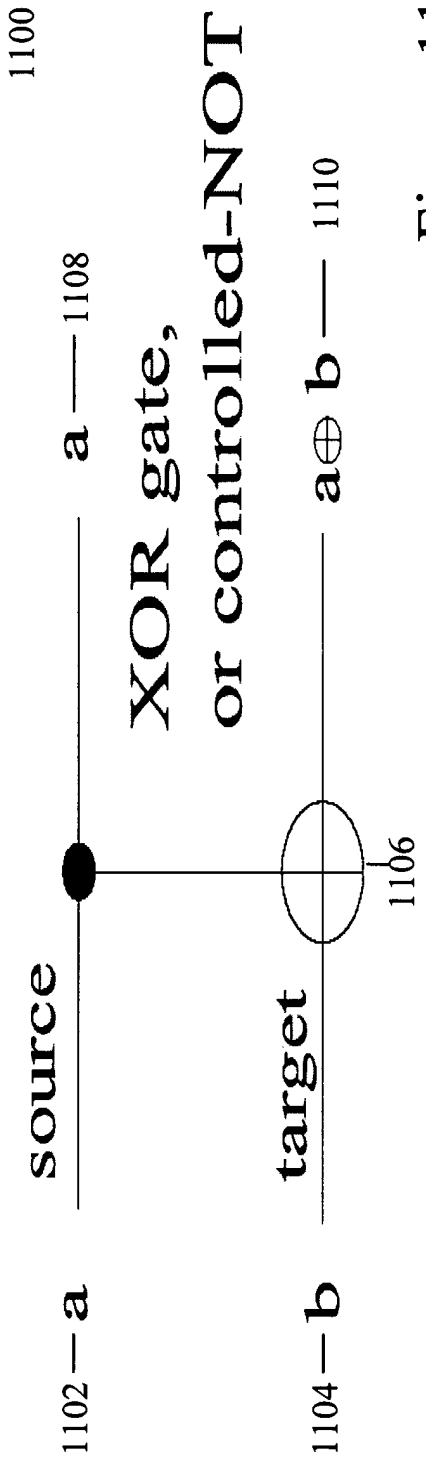

Figure 11

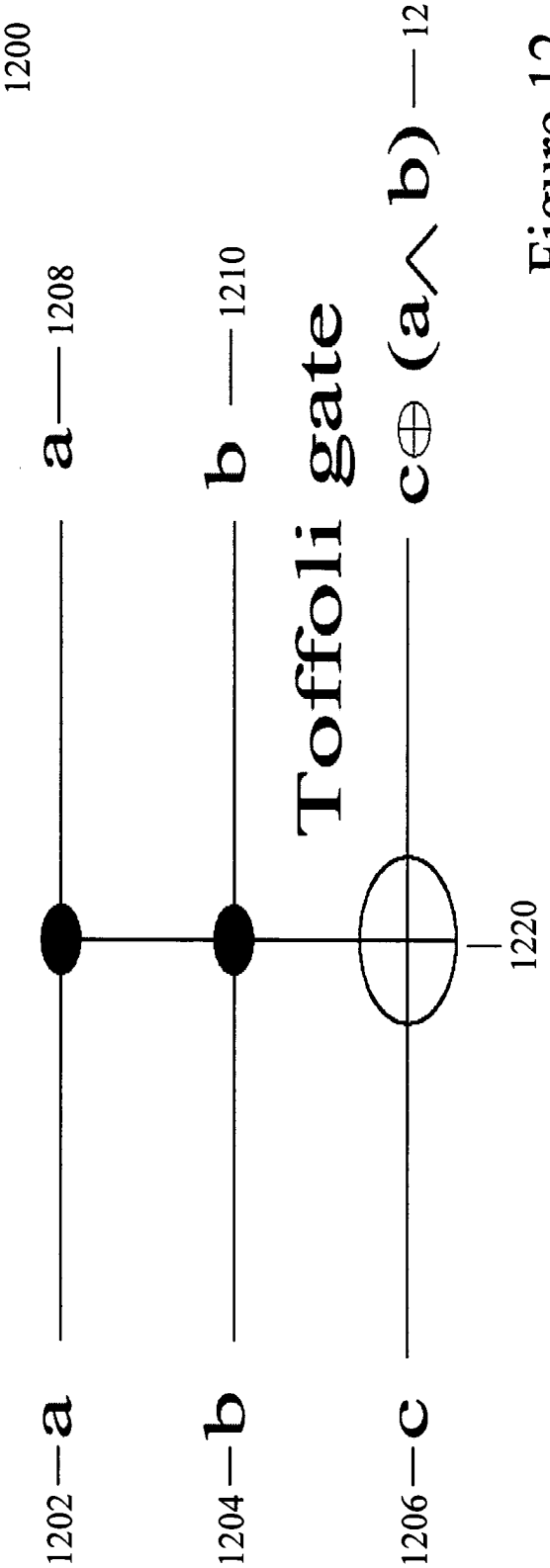

Figure 12

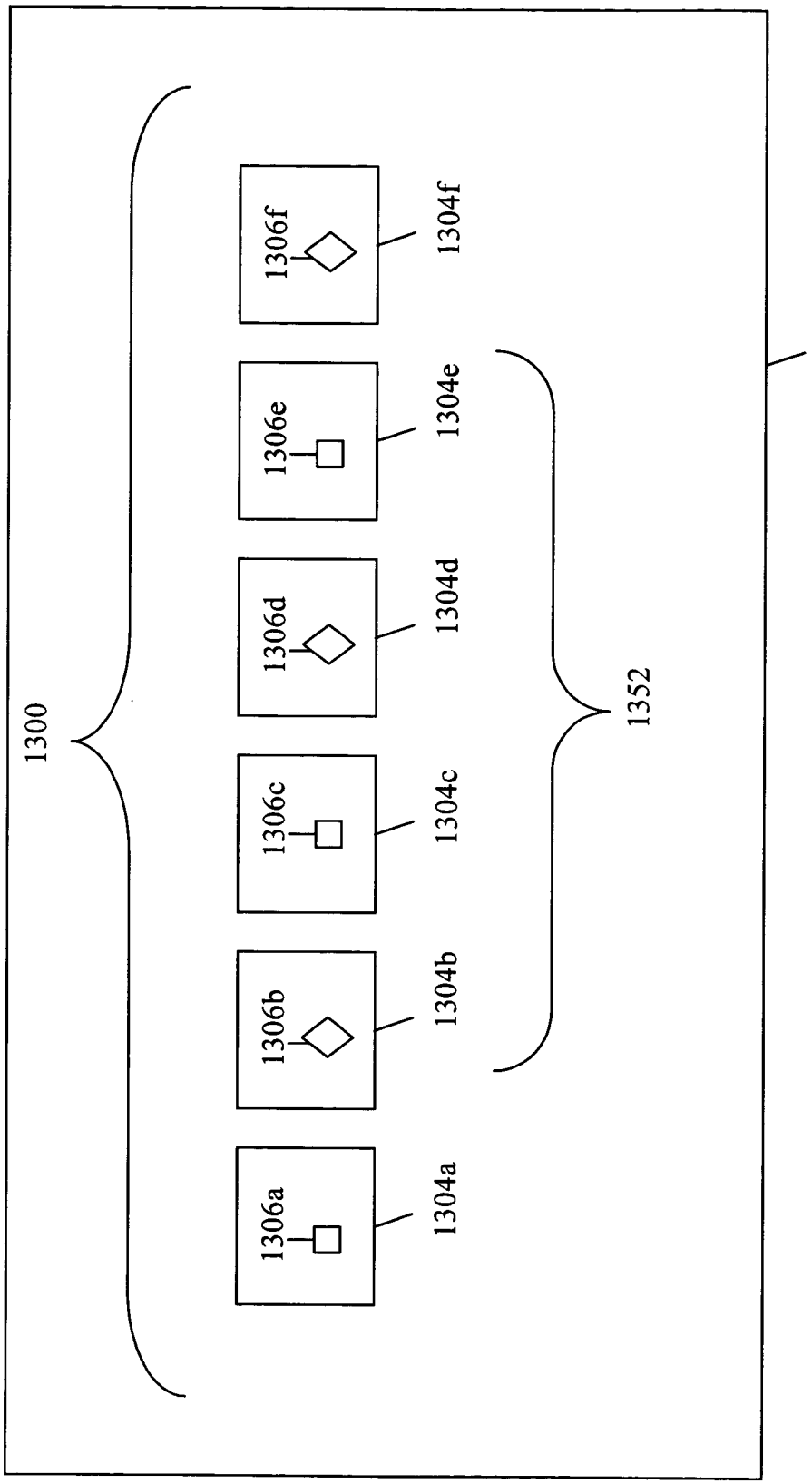
Quantum Processor 604
1300
1352
1306a
1304a
1306b
1304b
1306c
1304c
1306d
1304d
1306e
1304e
1306f
1304f

Figure 13

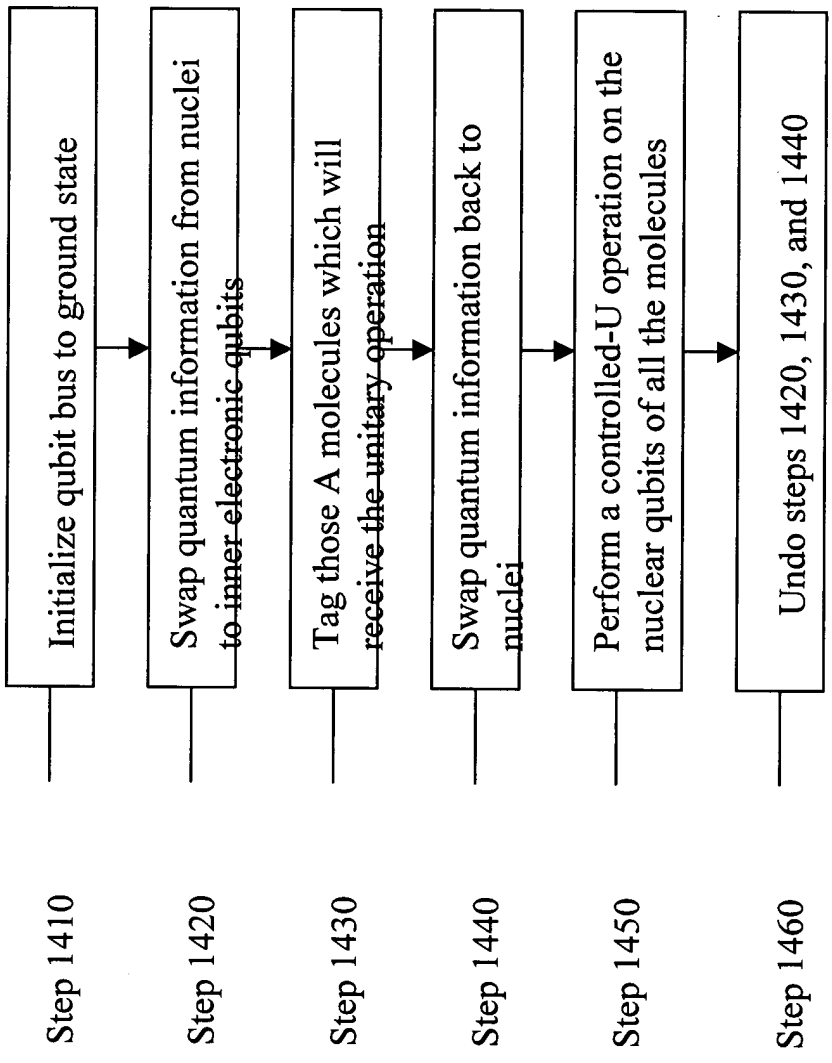
Initialize qubit bus to ground state
Swap quantum information from nuclei to inner electronic qubits
Tag those A molecules which will receive the unitary operation
Swap quantum information back to nuclei
Perform a controlled-U operation on the nuclear qubits of all the molecules
Undo steps 1420, 1430, and 1440
Step 1410
Step 1420
Step 1430
Step 1440
Step 1450
Step 1460

Figure 14

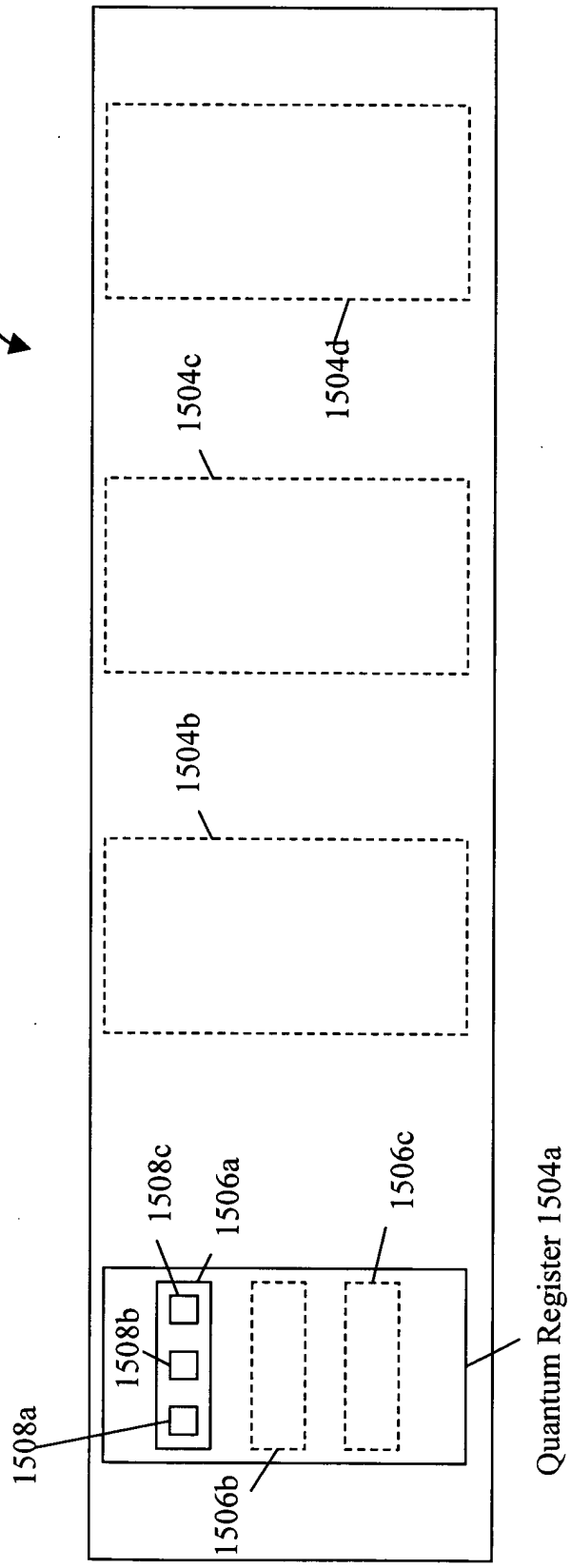
606
1504d
1504c
1504b
1508c
1506a
1506c
1508b
1508a
1506b
Quantum Register 1504a

Figure 15

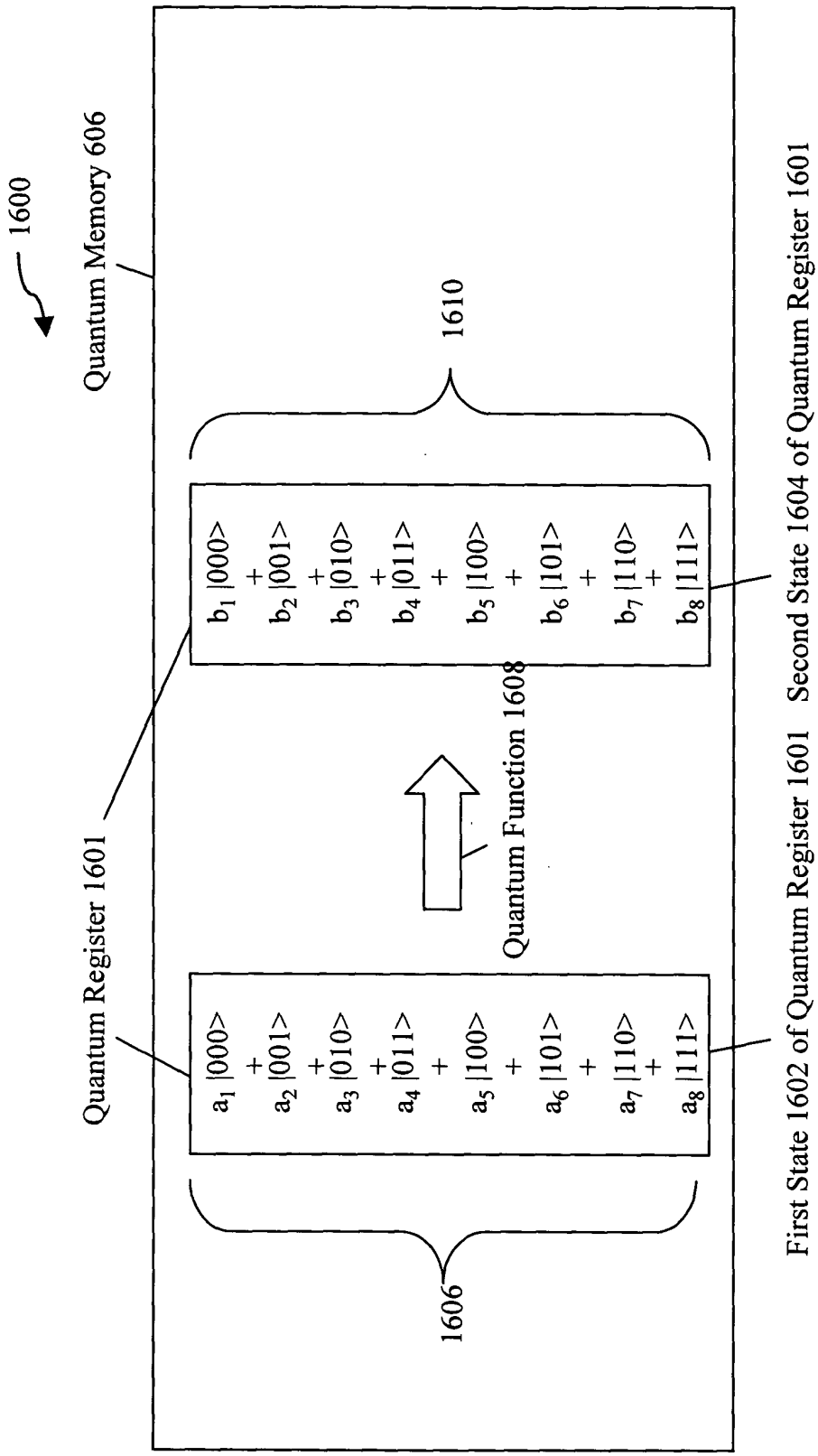
1600
Quantum Memory 606
Quantum Register 1601
Quantum Function 1608
1606
1610
$a_1|000> + a_2|001> + a_3|010> + a_4|011> + a_5|100> + a_6|101> + a_7|110> + a_8|111>$
$b_1|000> + b_2|001> + b_3|010> + b_4|011> + b_5|100> + b_6|101> + b_7|110> + b_8|111>$
First State 1602 of Quantum Register 1601
Second State 1604 of Quantum Register 1601

Figure 16

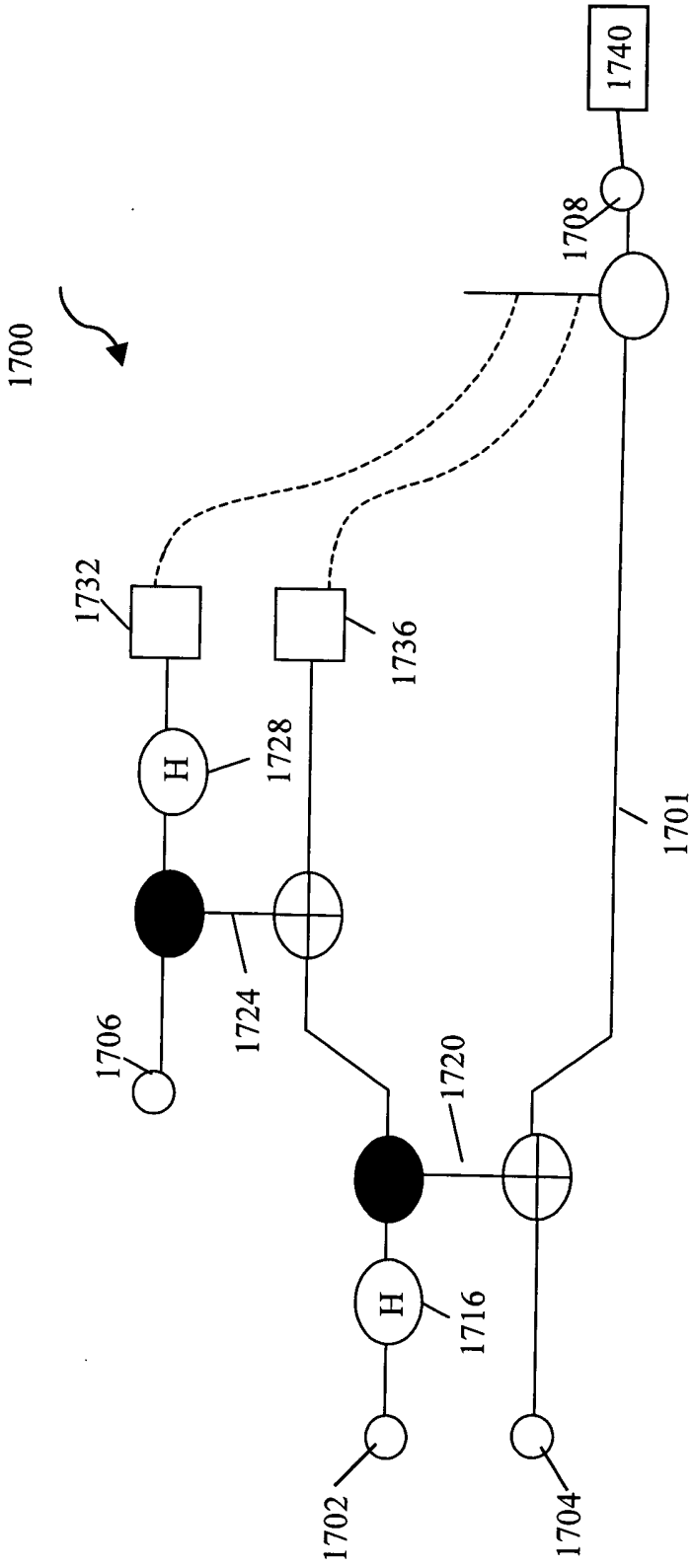
1700
1740
1708
1732
1736
H
1728
1701
1706
1724
1720
H
1716
1702
1704

Figure 17